Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 2132404 Date: 03-01-2015

Subject Name: Principal of Power Electronics

Time: 02.30 pm - 05.00 pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Draw the Block Diagram of Power Electronics System and Explain functionality and working of each block in detail.	**07**
	(b)	Draw symbols and V-I characteristics of (a) IGBT (b) DIAC (c) Power BJT (d) UJT (e) TRIAC (f) Power MOSFET (g) DIAC	**07**
Q.2	**(a)**	Draw and Explain Practical Power Semiconductor Switch Characteristics.	**07**
	(b)	Draw and Explain construction, characteristics and application of Power Diode	**07**
		OR	
	(b)	Draw and Explain input and output characteristics of PNP transistor in CB configuration.	**07**
Q.3	**(a)**	Explain construction, physics of operation and V-I Characteristics of Power BJT.	**07**
	(b)	Explain construction and working of Power MOSFET.	**07**
		OR	
Q.3	**(a)**	Explain switching charateristics of Power BJT with necessary diagram.	**07**
	(b)	Explain construction, physics of operation and V-I Characteristics of Power FET.	**07**
Q.4	**(a)**	Explain two transistor model of an SCR and derive the expression for anode current in standard usual notation.	**07**
	(b)	List Turn ON methods. Explain Turn ON Characteristics of an SCR.	**07**
		OR	
Q. 4	**(a)**	Define String Efficiency. Explain series and parallel operation of SCR with suitable circuit.	**07**
	(b)	List Turn OFF methods. Explain Turn OFF characteristics of an SCR.	**07**
Q.5	**(a)**	Explain construction, characteristics and application of DIAC.	**07**
	(b)	Explain Construction, Physics of operation and V-I Characteristic of Power MOSFET	**07**
		OR	
Q.5	**(a)**	Explain construction, characteristics and application of TRIAC.	**07**
	(b)	Explain the switching characteristics and SOA of Power MOSFET.	**07**

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